

Prairie View A&M University Combined Research and Extension Plan of Work 2020-2024

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I. Plan Overview

1. Executive Summary

2020 Prairie View A&M University

Research and Extension Plan Overview

This Plan Overview represents the combined efforts of the Cooperative Extension Program (CEP) and the Cooperative Agricultural Research Center (CARC) of the College of Agriculture and Human Sciences at Prairie View A&M University. Given the strong collaborative history of Extension and Research, we are positioned to fulfill the charge of the Land-grant mission by packaging evidence-based science to strategically disseminate to diverse audiences in rural and urban communities. Our mandate issued in 1972 created the foundation to provide life-long learning and youth development through Extension and Research delivery. We are located on the campus of Prairie View A&M University with access to a 778 acre research and demonstration farm which serves as a model platform for hands-on teaching, novel research, and engaging clientele. The Cooperative Extension Program responds to the needs of underserved Texans through life-changing opportunities that empower families, promote agriculture, strengthen communities and foster leadership development in youth. The work of both Cooperative Extension and CARC is guided by strategic plans. Local advisory committees and other agencies are major contributors to a structured educational program development system in addressing identified issues. To effectively achieve the goals of the planned programs, Extension specialists and Research scientists work together to change human behavior by teaching clientele how to apply the recommendation of scientific research. Program delivery focuses on increased community awareness by way of mass marketing, social networking, and information delivery both group and one-on-one consultation through the Extension network. The Extension strategic plan is designed to enable the dissemination of evidence-based information to the citizens of Texas on issues of importance as identified through grassroots and other stakeholder input processes. The program goals will be addressed through the following topical areas:

1. Ensure a sustainable, profitable, and competitive food and fiber system in Texas.
2. Enhance natural resource conservation and management.
3. Build local capacity for economic development in Texas communities.
4. Improve the health, nutrition, safety, and economic security of Texas families.
5. Prepare youth to be productive, positive, and equipped with life skills for the future.
6. Expand access to Extension education and knowledge resources.

The Cooperative Agricultural Research Center (CARC) through its strategic initiatives focuses on issues vital to the citizens and stakeholders in rural and urban communities. The program priorities will be addressed the following areas:

1. Achieve resiliency in food, fiber and ecological systems.
2. Integrate basic and applied research to advance the science and understanding of the physiological mechanism affecting the reproductive performance in livestock.
3. Address issues related to nutrition, food safety/quality, food security/insecurity and the related impacts on quality of life.

4. Examine the efficacy of producing high-value, low-volume medicinal and nutritional products.
5. CARC and CEP will collaborate to address pre and post emergency management and disaster education.

The population of Texas in 2018 was reported at 28 million with 21% of children under 18 in families living below the poverty line. The Cooperative Extension Program has a presence in 35 of the 254 Texas counties and housed with the Texas A&M AgriLife Extension Service agents. Therefore, a high number of underserved families and communities in these counties are in need of the services provided by CEP and CARC. Despite its growth and diversified economy, Texas also has had a less fortunate history since 1980 of having a larger percentage of its population living in poverty than the overall US average. With poverty rates twice as high as those for white Texans, Hispanic and black residents are disproportionately burdened by poverty, with Hispanics making up more than half of the state's poor population even though they're far from the majority of the state's population. The Census Bureau determines poverty based on income and family size. For example, an individual is classified as living in poverty if he or she makes less than \$12,752 a year. A family of four with two children will be classified as poor if its income is less than \$24,858. Rising incomes for women helped to decrease a wage gap between Texas women and men that had barely budged in recent years. But Texas women are still far from reaching income parity.

According to the 2017 Ag Census, there are 11, 268 African America producers operating 8,132 farms. Total land acres for these producers is 972,552. Many of the farms are operated by socially disadvantaged and traditionally underserved agricultural producers. Often, these producers find it difficult to sustainably manage their farming/ranching operations due to several issues including a limited knowledge in farm and risk management and marketing. Therefore, Extension will continue its legacy of taking the University to the communities with evidence-based science and modern technologies to farmers and producers to create positive changes.

This plan also describes efforts to implement a Limited English Proficiency Plan (LEP) to improve program accessibility in critical areas for LEP individuals. The LEP plan was designed with input from agents and program specialists in the four units: Agriculture and Natural Resources, Family & Community Health, 4-H Youth Development and Community and Economic Development. Staff will be trained to promote and deliver services such as web/internet access in multiple languages and access to other program services. Each county will determine the scope and priorities to define which languages will be the focus of LEP efforts and what kinds of the subject matter will be given priority for translation of materials. Flexibility in the plan and budget will be considered to respond quickly to emerging needs or local issues.

In CEP the new programs in areas including mental health and wellness, hurricane recovery, Agrobotics, childhood obesity, food insecurity, homeless veterans, community gardens, small farm livestock profitability, and teen nutrition peer mentoring.

State Issues

The National Institute of Food and Agriculture (NIFA) categories called Science Emphasis Areas (SEA) demanded that we revisit our Knowledge Areas and Critical Issues. NIFA's new Science Emphasis Areas are Agro climate Science; Bio economy-Bioenergy-Bio products; Education and Multicultural Alliances; Environmental Systems; Family and Consumer Sciences; Food Safety; Human Nutrition; Sustainable Agricultural Production System; and, Youth Development. According to NIFA, the 9nine SEA's were configured based on program groupings under NIFA's priorities and organizational structure that focused on supporting its vision, mission, and priorities.

To develop the signature programs for the next programming cycle (POW) we sought to gather data and input from diverse venues. The input was contributed by clientele, stakeholders, committees, agents, specialists, scientists, program leaders, experts, and administrators. Each issue was treated on its merit, and the subsequent data analysis processes precipitated approximately 32 major issues. At a formal retreat, the program leaders, experts, and administrators successfully further reduced the number of major issues to match the newly established National Institute of Food and Agriculture (NIFA) nine 9 Science Emphasis Areas (SEA's). Subsequent prioritization produced 10 State defined Critical Issues with appropriate description meant to formulate projects/programs in the REEPort system.

State Defined Critical Issues:

Given the targeted audience that encompasses various ethnic groups, religions, cultural and socioeconomic backgrounds, the outreach methods used to address the identified needs are client focused and culturally sensitive. The State Issues aligned with the nine Science Emphasis Areas to be addressed in this federal Plan of Work include the following:

Environmental Management: This critical issue is focused on managing environmental quality and natural resources, addressing climate variability and climate extremes related issues using innovative technologies, laboratory, and field experiments, numerical modeling, big data analysis, and best management practices. The broad coverage of the critical issues includes key issues such as water conservation and water protection, water quantity and quality, soil health and management, climate variability and climate extremes (e.g., floods, and drought), storm water and groundwater management, best management practices, precision agriculture, smart agricultural techniques, environmental awareness, and soil fertility for sustained and consistent yields of high quality.

Healthy Lifestyles: The prevalence and reduction of chronic illness and disease is the focus of health and wellness programming. Risk factors associated with high blood pressure, high cholesterol, excess weight, and lack of physical activity can lead to major life limitations and death. Other health problems include cardiovascular disease, overweight/obesity, and high cholesterol. All these health issues are exacerbated by poor nutrition, smoking, and inactivity. The combination of increased calorie intake and sedentary lifestyles has serious implications for the health and well-being of youth and adults. There is a need to implement nutritional value programs in limited-resource communities to introduce highly nutritious specialty crops.

Disaster Management & Outreach: To strengthen the CAHS capacity and commitment to understand and address disaster issues that impact underserved populations across all four program areas of CEP and to 2) maintain close ties with USDA and related agency personnel while leveraging ongoing network relationships with local interest groups. It will utilize a comprehensive emergency management approach. Pertinent issues include: refining strategies, addressing health disparities, training, and nurturing collaborative partnerships. Training will target disaster victims (individuals and families), agencies, universities, and political leaders. This will encourage a culture of pre-planning in times of disaster and give victims' access to needed resources to maintain the quality of life and be disaster resilient.

Fostering Strong Families: If the future of our society is our children, then the key to human well-being rests primarily with parents and teachers. Parenting, though still one of the most underrated jobs in society, is beginning to attract some of the attention and consideration it deserves. Success at any job first requires a sound understanding of its purpose. The basic purpose of parenting has not changed throughout history. Financial management provides educational and technical information to limited resource families to strengthen family systems and resiliency through information to develop an understanding of how individuals and families obtain and use resources of time, money and human capital to achieve their standard of living and overall quality of life.

Food Safety and Education: To ensure the safety of foods an understanding of the complete food chain is essential. Research will be carried out on the development of nutritious value-added food products from goat milk, goat meat, and specialty fruits and vegetables produced on the PVAMU Farm. The safety of these foods from farm to table will be emphasized including production, post-harvest storage, processing, distribution, and consumer handling and preparation. Microbial analyses will include traditional plate counting methods and molecular methods using DNA and RNA. Extension will provide educational information about the importance of food safety and the relationship between basic sanitation practices when handling food, reducing waste, and conserving nutrients to prevent foodborne illness.

Food Security in Texas Communities: Food Security is an issue that affects persons nationally and internationally. In the United States, it has been estimated that 12% of the population is food insecure. Compared to the national average, Texas ranked among the highest rates of food insecurity in the United States. Food security must be addressed throughout the entire food chain including production, processing, and distribution to reduce insecurity. Research will focus on the post-harvest storage and conversion of commodities to safe, nutritious, affordable and culturally relevant foods to communities. Communities in Texas will serve as models for research that can be applied in other communities nationally and internationally. Collaboration with researchers in plant and animal sciences will be emphasized and fostered.

Sustainable Livestock Production: The culmination of these issues will focus on developing sustainable farming/ranching operations with a concentration on increasing the health and productivity of livestock through optimizing nutrition, and reproduction. We will improve economic returns and long-term viability by providing in-depth training in risk management, best practices and agricultural business planning. Utilizing technology, the purpose is to ensure that these agricultural

operations are not only profitable but that they are also friendly to the community and the environment. Assisting with 4-H and youth development activities related to agriculture will help to foster the next generation of the agriculturists.

Crop Production and Utilization: These issues include high-value low volume specialty crop production to improve the income situation of our clientele. Research will focus on under-utilized fruit and vegetable crops, medicinal plants, legumes, and root crops. Variety trials, fertilizer treatments, and different cultural practices will be investigated to determine best management practices for crop production and to conduct genetic improvements and biochemical evaluation of plant products. Extension will provide educational information and demonstration projects to limited resource farmers. Extension will improve economic returns and long-term viability by providing training in risk management, best practices and agricultural business planning.

Community, Resource and Economic Development: We aim to increase entrepreneurship opportunities through small business training and consulting. Staff will work with individuals, communities, and organizations, to inform and educate them on issues related to entrepreneurship, sustainable housing, disaster response, programs for limited resource individuals, asset and wealth building, saving and investing, credit building, debt management, and budgeting. We will increase community development and community services through non-profit capacity building. We will also develop and implement programs that address rural prosperity in the areas of economic development, technical innovation, improved quality of life, support of a rural workforce, and e-connectivity for rural America as identified by the Task Force on Agriculture and Rural Prosperity.

Preparing Youth for Life and Work: These issues pertain to youth and their adult leaders. Caring adults help youth navigate adolescence and transition to adulthood. They provide positive learning environments that foster a sense of belonging while facilitating mastery, independence, and generosity for young people. Youth and their adult leaders are empowered to take actions that promote health, develop positive social relationships and contribute to society. Participants will be able to develop a variety of life skills (leadership, livelihood, cognitive, interpersonal, etc.). This is accomplished primarily in three content areas: civic engagement, healthy living, and science.

Individual and Joint Efforts (CARC & CEP)

Four State Issues will be addressed by Cooperative Extension Program (CEP): Healthy Lifestyles; Fostering Strong Families Community; Resource and Economic Development; and, Preparing Youth for Life and Work. The remaining six will be undertaken as a collaborative team of Cooperative Agriculture Research Center (CARC), and Cooperative Extension Program (CEP) combined effort: Environmental Management; Disaster Management & Outreach; Food Safety and Education; Food Security in Texas Communities; Sustainable Livestock Production; and, Crop Production and Utilization.

Overall, the goal is to ensure that our underserved communities and underrepresented families have greater access to the types of research, educational and outreach services they need to assist them in solving everyday problems and issues.

2. FTE Estimates

Year	1890 Extension	1890 Research
2020	65.0	35.0
2021	68.0	38.0
2022	70.0	40.0
2023	73.0	42.0
2024	75.0	45.0

II. Merit / Peer Review Process

Extension programs initiated in the state of Texas have funded in whole or part from Smith-Lever or Section 1444 and 14445 funds requiring a merit review process. The review panel is comprised of Cooperative Extension Program

administrative leaders, Dean of the College of Agriculture, Cooperative Agricultural Research Center director, scientists, faculty, and Cooperative Extension director, program leaders, and specialists. Particular focus to the plan is to determine if appropriate strategies are designated to reach the limited resource clientele mandated by the United States Department of Agriculture. The plans are reviewed based on needs assessment, planned programs, outcomes, and evaluation. This combined leadership team is responsible for the oversight and management of all programs planned and implemented by Extension specialists and agents.

All proposed research projects that are funded under either Evans-Allen, Experiment Station (Hatch), or otherwise, undergo a merit review process. Each proposal submitted for support is routed through an internal review committee for review and if deemed necessary, each proposal is routed through the University Committee on Research. The Research Director selects a set of individuals to serve as members of an internal review panel in consultation with the University's Vice President for Research. At a minimum, three individuals review and evaluate each proposed project prior to approval for external submittal and/or internal fund allocation. Scientific peer review is incorporated in that all project reports including the Current Research Information System must show evidence of external review. Written comments should be included with final proposals for campus routing. Routing proposals through quality control checkpoints (Research Director, Dean of the College and Vice President for Research) are designed to ensure that proposals meet RFP guidelines as well as meet scientific merit qualifications. All proposals are quality checked by our on-campus Office of Sponsored Programs.

III. Stakeholder Input

1. Actions to Seek

Multiple sources of input from stakeholders include local clientele, town hall meetings, advisory committee recommendations, and special interest groups. We contacted traditional as well as non-traditional stakeholder groups and individuals. Issues were also identified through the TFCC database and prioritized through joint retreats with Extension and Research. We use well-established media outlets, and popular social media applications to announce programs and activities. Extension staff developed annual plans during the fall program planning conference with programs focused on issues identified and validated by local stakeholders.

We share the results of our programs with our stakeholders and use the results of our Volunteer Satisfaction Survey to encourage a high level of participation.

2. Methods to Identify

Well established community relationships allow for various groups to be identified to collect input, such as Advisory Committees, Needs assessment, Leadership Advisory Board, and various interest groups. Extension agents utilize open listening sessions or local town hall meetings, and customer satisfaction surveys, as a means of getting grassroots involvement in the program planning and data collection process. We advertise on the university's website, other websites, and social media applications to highlight our work and seek volunteers.

3. Methods to Collect

Data will be collected during educational outreach programs, town hall meetings, online surveys, smart phone applications, Texas Community Future Forum (TCFF) online need assessment tool, College wide need assessment and issue prioritization retreats. Also through paper surveys, surveys to email distribution lists, and target smartphones for surveys via texts, and QR codes.

Online tools used to collect stakeholder inputs

Email
Qualtrics
Google Forms
TCFF system
QR-Code

In order to address the national priority areas, counties performed needs assessments through their advisory committees. Collaboration with CEP, CARC and other departments working in partnership with staff in Family & Consumer Sciences,

Agriculture & Natural Resources, Community & Economic Development, and 4-H & Youth Development to address and solve specific problems within the State of Texas. The CEP initiated the Stakeholders' Opinion Survey as the initial step of issue identification. County Extension Agents distributed and collected stakeholders input regarding the critical issues in each county. Using NVivo (qualitative statistical analytical software) we analyzed the thousands of issues, extracted themes and synthesized macro-issues into manageable working groups. The conclusion was 2 dozen, data-driven, critical issues for our experts to perform the final validation.

The process to solidify our designated number of critical issues began with our Stakeholders' opinions; Agents and Specialists contributions; systematic statistical analytical methodology; with our Administrators, faculty, and Scientists editing and amending the final product. We organized a two-day retreat to assemble the Dean of the College of Agriculture and Human Services, Cooperative Extension Program director, program leaders, and specialists, Cooperative Agricultural Research Center director, scientists, faculty. These experienced and highly qualified personnel got together to consider all the issues identified, present their ideas, execute the critical issue prioritization process, formulate the programs, and produce the information for reporting.

As with any instrumentation, we addressed the validity (Face validity, construct validity, and content validity). Criterion validity will be observed during the implementation stage of our programs. We completed several iterations of listing issues, combining issues, using deductive reasoning to reduce sub-themes; prioritizing the list again; until we reduced the list of issues from more than a hundred to thirty-two.

We implemented the following stages to arrive at the desired number of critical issues:

- Design stakeholder Need and Assessment Tool
- Collect data from stakeholders
- Display comprehensive issue list (Using NVivo qualitative software application)
- Categorize issues under NIFA SEA's
- Take prioritization poll
- Generate prioritized issue list
- List top 5-7 critical issues
- Develop project/program matrix
- Allocate FTE
- Complete the project/program matrix

At the end of our issue prioritization retreat with members of CARC and CEP to formulate the critical issues, we produced a list to be used during Program Planning.

4. How Considered

Extension agents and specialists meet with diverse groups to analyze issues and the most effective methodology to plan programs to address the issues. Program priorities lead to in-depth planning sessions to develop outcome-based activities. Extension program leaders and planners consider all input from multiple sources including our wide-ranging and well-informed stakeholders. As time and county demographics change so do the needs, resources, health, etc. of our clientele. Our in-depth programs must also change in the short term; and, we incorporate data and ideas for long-term planning and data-driven decision making.

During our step-by-step planning, we are cognizant of the chronic illnesses (diabetes, high blood pressure, etc.), healthy lifestyles; childhood obesity; housing, business, and farming needs of our limited resource clientele. Our attention to detail allows us to move beyond critical issue identification to program designing. These programs now become the units of analyses for consideration by CARC researchers to format research and CEP agents to design relevant educational programs.

We provide education, information, direct/indirect assistance, face-to-face advisement, and professional referrals to the clientele in both the urban and rural counties.

For immediate disaster response, like hurricane or major fire, we rely on local input for logistical support and coordination. Collected input allows us to find emergency centers that provide shelter; temporary locations to get food, water, and

clothing. We use it to inform our clientele of available medical facilities, and places to register and itemize their personal needs. Post-disaster, this valuable information makes it easier for us to plan our programs based on location, and specific needs of the underrepresented clientele.

IV. Critical Issues

1 Environmental Management

Description:

This critical issue focused on advancing scientific understanding and providing education and knowledge in managing natural resources and environmental systems using innovative technologies, laboratory and field experiments, numerical modeling, big data analysis, and best management practices. The broad coverage of the critical issue includes water conservation and protection, water quantity and quality, soil health and management, climate variability and climate extremes (e.g., floods and drought), stormwater and groundwater management, best management practices, smart agriculture, smart agricultural techniques, environmental awareness, wildlife management, sustainable forest management, best horticultural practices, and soil fertility for sustained and consistent yields of high quality.

Term: Long

Science Emphasis Areas

Agroclimate Science
Environmental Systems

2 Healthy Lifestyles

Description:

The prevalence and reduction of chronic illness and disease are the focus of health and wellness programming. Risk factors associated with high blood pressure, high cholesterol, excess weight, and lack of physical activity can lead to significant life limitations and death. Other health problems include cardiovascular disease, overweight/obesity, and high cholesterol. All these health issues are exacerbated by poor nutrition, smoking, and inactivity. The combination of increased calorie intake and sedentary lifestyles has serious implications for youth and adults' health and well-being. There is a need to implement nutritional value programs in limited-resource communities to introduce highly nutritious specialty crops.

Term: Long

Science Emphasis Areas

Family & Consumer Sciences

3 Disaster Management & Outreach

Description:

CAHS seeks to strengthen its capacity and commitment to understand and address disaster issues that impact underserved populations across all four CEP program areas. It also strives to maintain close ties with USDA and related agency personnel while using ongoing work relations with local interest groups. It will utilize a comprehensive emergency management approach and address issues such as refining strategies, addressing health disparities, training, and nurturing collaborative partnerships. The training will encourage a pre-planning culture in times of disaster and give victims access to needed resources to maintain the quality of life and be disaster resilient.

Term: Long

Science Emphasis Areas

Family & Consumer Sciences

4 Fostering Strong Families

Description:

If our society's future is our children, then the key to human well-being rests primarily with parents and teachers. Parenting, though still one of the most underrated jobs in society, is beginning to attract some of the attention and consideration it deserves. Success at any job first requires a sound understanding of its purpose. The essential purpose of parenting has not changed throughout history. Financial management provides educational and technical information to limited-resource families to strengthen family systems and resiliency through information to understand how individuals and families obtain and use time, money, and human capital to achieve their standard of living and overall quality of life.

Term: Long

Science Emphasis Areas

Family & Consumer Sciences

5 Food Safety and Education

Description:

To ensure the safety of foods, an understanding of the complete food chain is essential. The research will develop nutritious value-added food products from goat milk, goat meat, and specialty fruits and vegetables produced on the PVAMU farm. The safety of these foods from farm to table will be emphasized, including production, post-harvest storage, processing, distribution, and consumer handling and preparation. Microbial analyses will include traditional plate counting methods and molecular methods using DNA and RNA. Extension will provide educational information about the importance of food safety and the relationship between basic sanitation practices when handling food, reducing waste, and conserving nutrients to prevent foodborne illness.

Term: Long

Science Emphasis Areas

Food Safety

6 Sustainable Livestock Management

Description:

In the large and small ruminant animal industry, livestock production, productivity, and management system continue to grow in Texas. This issue will focus on improving productivity with a variety of agricultural animals (i.e., cattle, goats, poultry, horses), improving livestock management, technologies, and practices. This issue will also conduct multiple research investigations on health, productivity, nutrition, reproduction, genetic, and studying all aspects of livestock productivity. Additionally, technology will be utilized to determine profitably and educate farmers and ranchers about developing sustainable farming/ranching operations with the economic and long-term viability through in-depth risk management training and best practices.

Term: Long

Science Emphasis Areas

Sustainable Agricultural Production Systems

7 Crop Production and Utilization

Description:

We can discover new knowledge about genetics, growth, and disease resistance of field, grain, fruit, and vegetable crops and provide agronomic information through research. This includes high-value low volume specialty crop production and major crops to improve income and evaluate practices and systems of crop yield and profit for clientele. The research will focus on under-utilized fruit and vegetable, medicinal plants including industrial hemp, legumes, and root crops, and actively investigate agronomic crops (i.e., corn, wheat, forage, and

oats). Variety trials, crop growth, development, fertilizer treatments, and cultural practices to investigate best management practices for crop production and conduct genetic improvements and biochemical evaluation of plant products.

Term: Long

Science Emphasis Areas

Sustainable Agricultural Production Systems

8 Community and Economic Development

Description:

Entrepreneurship opportunities can increase through small business training and consulting. Staff will work with individuals, communities, and groups to inform and educate them on issues related to sustainable housing, disaster response, senior programs and resources, programs for limited resource individuals, asset and wealth building, saving and investing, credit building, debt management, and budgeting. We can also increase community development and community services through non-profit capacity building. Additionally, that address rural prosperity in economic development, technical innovation, improved quality of life, support of a rural workforce, and e-connectivity for rural America as identified by the Task Force on Agriculture and Rural Prosperity programs will be developed and implemented.

Term: Long

Science Emphasis Areas

Family & Consumer Sciences

9 Preparing Youth for Life and Work

Description:

The program supports youth and their adult leaders. Caring adults help youth navigate adolescence and transition to adulthood. They provide positive learning environments that foster a sense of belonging while facilitating mastery, independence, and generosity for young people. Youth and their adult leaders are empowered to take actions that promote health, develop positive social relationships, and contribute to society. Participants can develop a variety of life skills (leadership, livelihood, cognitive, interpersonal, etc.). This is accomplished primarily in three content areas: civic engagement, healthy living, and science.

Term: Long

Science Emphasis Areas

Youth Development

10 Food Security in Texas Communities

Description:

Food security is an issue that affects persons globally. In the United States, it has been estimated that 12 percent of the population is food insecure. Texas ranked among the highest rates of food insecurity in the United States. Food security must be addressed throughout the entire food chain, including production, processing, and distribution, to reduce insecurity. The research will focus on the post-harvest storage and conversion of commodities to safe, nutritious, affordable, and culturally relevant foods to communities. Communities in Texas will serve as models for research that can be applied in other communities nationally and internationally. Collaboration with researchers in plant and animal sciences will be emphasized and fostered.

Term: Long

Science Emphasis Areas

